

## REMARKS

The Office Action mailed on September 15, 2003 has been carefully considered and the Examiner's remarks are appreciated. Claims 10-14 have been canceled and new claims 23-27 have been added. Claims 15-19 and 22 have been allowed. Therefore claims 1, 3-9, 20, 21, and 23-27 are presented for examination, with support for the new claims found in the Specification, Claims, and Drawings. In response to the Office Action, Applicants respectfully request reconsideration in view of the above amendments and the following remarks.

### Discussion of the Office Action

In the Office Action, the Examiner objected to an informality in the Specification, now corrected, and to informalities in each of claims 20-22, also now corrected.

The Examiner rejected claims 1, 3, 5-7, 9, 20 and 21 under 35 U.S.C. §102(b), and rejected claims 1 and 3-9 under 35 U.S. C. 103(a).

The Examiner objected to claims 10-19 and 22 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims. With respect to claims 10-14, Applicants have adopted the Examiner's suggestion by rewriting claims 10-14 as new claims 23-27, with claim 23 in particular rewritten in independent form including all the limitations of claim 10 and the base and intervening claims. With respect to claims 15-19 and 22, however, it is submitted that claim 15 is already in independent form, and therefore claims 15-19 and 22 are allowable as presented in Applicant's June 27, 2003 communication.

### Discussion of Rejection under 35 U.S.C. §102

The Examiner rejected claims 1, 3, 5-7, 9, 20 and 21 under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. No. 4,590,135 to Warszawski et al ("Warszawski"). It is respectfully submitted, however, that Warszawski fails to expressly or inherently describe all the claim limitations of independent claims 1 and 5, as required by MPEP §2131 as follows in part:

*"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."*

In particular, claim 1 requires, *"means for mounting and surface sealing a cell independently from other stack components..."* (emphasis added). A "cell" is described in the Specification, page 2, lines 4-6, *"These planar fuel cells are constructed from alternating flat single cells, which are trilayer cathode electrolyte anode structures, and bipolar plates, which conduct current from cell-to-cell and provide channels for gas flow"* (emphasis added). Thus, the tri-layer cell, such as 58 in Figure 2, is to be differentiated from the bipolar plates or interconnects used for conducting current. This is further evidenced in the Specification, page 5, lines 12-14, *"... a single cell located in a casing/holder plate is sandwiched between an anode plate and a cathode plate, identified as flow channel/interconnect in Figure 2."* Thus, it is clear that the present invention calls for the mounting and surface sealing of the entire tri-layer cell en toto independently from other stack components, and not just parts thereof.

In contrast, Warszawski teaches, among other things, a setback 60 on the frame 3 for receiving a cathode 2, and a setback 70 on the frame 55 for receiving an anode 1. The Examiner

has cited these setbacks and the fact that the anode and cathode are completely received and recessed therein, as supporting his position that mounting and surface sealing is indeed *"independent from other stack components."* It is respectfully submitted, however, that while the anode and cathode of Warszawski may be received and arguably independently mounted/sealed within the setbacks, the same is not true for other parts of the fuel cell (i.e. the electrolyte), or the fuel cell as a whole. Considering the electrolyte of Warszawski, a non-solid medium, the flow of the electrolyte is bounded and therefore defined by the frames 3 and 55. Moreover, the integrity of the electrolyte would therefore also be inherently dependent on the frames 3 and 55, the integrity of their glued or welded combination (see column 4, line 60), and the effects imparted by other adjacent stack components (Figure 13).

On this last point, it is appreciated that the "fuel cell" of Warszawski may only be characterized as such when the frames 3 and 55 are affixed together, such as by gluing or welding, and a space 64 between the anode 1 and cathode 2 is formed through which an electrolyte may be flowingly conveyed. When characterized in this manner, Figure 13 clearly shows that the complete "fuel cell" of Warszawski is in fact at least mounted in a dependent fashion to other stack components, namely the first current collector 23' and the second current collector 23". As distinguished from Warszawski, the ability of the present invention to mount and seal the entire cell in the cut-away section independently from other stack components is primarily due to it being a solid tri-layered fuel cell (SOFC) structure. With respect to the Examiner's statement that the cell casing/holder plate of the present invention does not preclude multiple cell casing/holder plates such as plates 3 and 55, and that the surface sealing of the fuel cell along respective rim sections 70 and 60 thereof is independent of

other stack components, it is submitted that these statements are made moot by the aforementioned comments since the issue is not between single vs multiple parts of a cell casing/holder plate.

Since Warszawski fails to teach each feature set forth in independent claims 1 and 5, it fails to support a rejection thereof under 35 USC 102, and thus should be withdrawn. Furthermore, it is respectfully submitted that dependent claims 3, 4, 6-9, 20, and 21 are also in condition for allowance pursuant to MPEP §2131, as well as being dependent on now allowable base and/or intervening claims.

#### Discussion of Rejections under 35 USC §103

Claims 1 and 3-9 were rejected under 35 USC 103(a) as being unpatentable over U.S. Pat. No. 5,482,792 to Faita et al ("Faita"). Applicant again submits that Faita does not inherently or express describe all the features of the present invention. As can be seen in Figures 1 and 2 of the present invention, the cell casing/holder plate (e.g. 15) is used to physically mount the cell (e.g. 16) directly thereon, such that the cell casing/holder plate alone cradles and supports the cell independent of other stack components. In this manner, the combined cell and cell casing/holder plate is treated as a unit in the subsequent steps for completing the stack construction, as shown in Figure 1. Second, and related to the independent cell mounting, the cell is also independently surface sealed to the cell casing/holder plate without the influence of other stack components. As described in the specification (e.g. page 3, lines 21-24) the cell casing/holder plate alone operates to "*separately seal a cell using conventional sealing materials such as ceramic, glass, or glass-ceramic based sealants.*"

Thus, any influence from another stack component, e.g. a seal-inducing compression force exerted by an adjacent component, is not necessary to produce the seal. The adhesion bond provided by such described sealants is sufficient to produce the seal and mounting between the cell and the cell casing/holder plate in a self-sufficient manner. Independence in mounting and surface sealing is evidenced, for example, in the exemplary embodiment of Figure 1 showing the cell completely recessed or tucked away when mounted within the cell casing/holder plate, and not just certain parts or sections of the cell. As a consequence, the cell itself does not directly affect or serve an active role in stack interconnection or structure; rather it is simply embedded within one of the structural components of the stack, i.e. the cell casing/holder plate.

In contrast to the present invention, each of the two gasket-frames (8) in Faita does not mount or surface seal a cell independently from other stack components. With respect to cell mounting, each gasket-frame is provided with a step (13) for receiving a single electrode therein. It is notable, however, that a single gasket frame is not capable of receiving the complete cell, i.e. the two electrodes (7) plus the electrolyte or ion exchange membrane (9). Because the member (9) remains beyond either one of the gasket-frames (8), both gasket-frames are required to secure the complete cell therebetween. Thus, the mounting of the cell to the gasket-frame is not accomplished independent of other stack components, and no teaching or suggestion is found in Faita to the contrary. Furthermore, in Faita, the cell is not capable of surface sealing to the gasket-frame independent of other stack components. Column 6, lines 39-46 states, "The sealing on the electrode side is ensured by the intrinsic resiliency of each gasket-frame/membrane pair. For this reason the gasket-frame is made of an elastomeric castable material. The

required resiliency must be sufficient to permit a safe sealing under nonexcessive mechanical load to avoid that deformation under compression may obstruct channels (3) and (11) and that the membrane be excessively stressed in the peripheral area" (emphasis added). Thus Faita teaches the use of multiple stack components to exert a compression force on a resilient, elastomeric "gasket-frame/membrane pair" to produce sealing. Absent in Faita is any teaching or suggestion to produce the cell sealing, without such a compression force, which is clearly distinguishable from the present invention. It is thus respectfully submitted that the 103 based rejections for claims 1 and 5 are now inappropriate in view of MPEP §2143.03 as follows in part:

*"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art."*

It is also respectfully submitted that claims 3, 4, and 6-9 are now also allowable as being dependent on allowable base claims.

### Summary

Having amended the claims and/or overcome Examiner's rejections as discussed above, Applicant respectfully submits that claims 1, 3-9, 20, 21, and 23-27 are in condition for allowance. Applicants respectfully request allowance of claims 1, 3-9, 20, 21, and 23-27, in addition to allowed claims 15-19 and 22.

In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, he is respectfully requested to initiate the same with the undersigned at (925) 422-7274.

Respectfully submitted,

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